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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,576	06/25/2001	Nanping Wu	210030	3311
23460 7590 06/14/2007 LEYDIG VOIT & MAYER, LTD TWO PRUDENTIAL PLAZA, SUITE 4900 180 NORTH STETSON AVENUE CHICAGO, IL 60601-6731			EXAMINER PATEL, NIHIR B	
			ART UNIT 3772	PAPER NUMBER
			MAIL DATE 06/14/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/891,576	WU, NANPING	
	Examiner	Art Unit	
	Nihir Patel	3772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03.27.2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-40 is/are allowed.
- 6) ☒ Claim(s) 1, 3-5 and 8-15 is/are rejected.
- 7) ☒ Claim(s) 2, 6 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of **Group I relating to plate freezer tubes, (claims 1-40)** in the reply filed on March 27th, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims **1 and 3-5** are rejected under 35 U.S.C. 102(b) as being anticipated by Wright et al. (US 6,032,726).

4. As to **claim 1**, Wright teaches a low-cost liquid heat transfer plate and method of manufacturing therefor that comprises a longitudinally extending plate body **10 (see column 2 lines 60-67)** having a first generally planar heat transfer surface, a second generally planar heat transfer surface spaced apart from the first heat transfer surface **16 (see column 4 lines 10-30)**, to define a plate body solid volume; and at least one longitudinally extending duct **11 (see column 3 lines 1-5)** passing through the plate body solid volume to channel a refrigerant maintained at a relatively high pressure, the duct having an elliptical cross-section (**see figure 1**) which maintains a stress level in the plate body, caused by the relatively high pressure refrigerant, at a

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level substantially below the yield strength of the material from which the plate body is constructed.

5. As to **claim 3**, Wright teaches an apparatus wherein at least one heat transfer surfaces contact items to be frozen in a plate freezer (**see column 1 lines 15-35**).

6. As to **claim 4**, Wright teaches an apparatus wherein both heat transfer surfaces contact items to be frozen in a plate freezer (**see column 1 lines 15-35**).

7. As to **claim 5**, Wright teaches an apparatus wherein the duct **11** extends throughout substantially the entire plate body in a serpentine manner (**see column 3 lines 1-30**).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims **8-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. (US 6,032,726).

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11. **As to claim 8**, Wight substantially discloses the claimed invention, see rejection of claim 1 above, but does not disclose a ratio between the total ellipse area to the total cross-sectional freezer-plate area being between about 0.57 to about 0.67. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wright's invention by providing a ratio between the total ellipse area to the total cross-sectional freezer-plate area being between about 0.57 to about 0.67 in order to improve the heat transfer process, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

12. **As to claim 9**, Wight substantially discloses the claimed invention, see rejection of claim 1 above, but does not disclose an elliptical duct that has a first diameter and a second diameter, wherein the ratio between the first diameter and the second diameter is between about 2.0 and about 2.35. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wright's invention by providing an elliptical duct that has a first diameter and a second diameter, wherein the ratio between the first diameter and the second diameter is between about 2.0 and about 2.35 in order to improve the heat transfer process, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

13. **As to claim 14**, Wight substantially discloses the claimed invention, see rejection of claim 1 above, but does not disclose an evaporator that is at a pressure between about 100 psig to about 300 psig. It would have been obvious to one having ordinary skill in the art at the time the

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invention was made to modify Wright's invention by providing an evaporator that is at a pressure between about 100 psig to about 300 psig in order to improve the heat transfer process, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, **105 USPQ 233**.

14. As to **claims 10-13 and 15**, Wright substantially discloses the claimed invention, see rejection of claim 1 above, but does not disclose a refrigerant that is a CFC refrigerant, non-CFC refrigerant, carbon dioxide and ammonia. It would have been obvious matter of design choice to provide a refrigerant that is a CFC refrigerant, non-CFC refrigerant, carbon dioxide and ammonia, since the applicant has not disclosed that having a refrigerant that is a CFC refrigerant, non-CFC refrigerant, carbon dioxide and ammonia solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with other refrigerant like Freon. The type of refrigerant being used also depends on where the device is being used and therefore it definitely considered a matter of design choice.

Allowable Subject Matter

15. **Claims 16-40** are allowed. The prior art does not disclose a plurality of generally rectangular plates having a length and a width with the length substantially greater than the width, the plates are disposed in an abutting relationship along their respective lengths, each plate has a first generally planar heat transfer surface, a second generally planar heat transfer surface spaced apart from the first heat transfer surface, to define a plate body solid volume.

16. **Claims 2, 6 and 7** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the

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base claim and any intervening claims. The prior art does not teach a spacing between the first and second heat transfer surface and the dimensions of the elliptical duct are such that the von Mises stress is less than the yield strength of the material from which the evaporator is constructed when the refrigerant has a pressure of approximately 1400 psig.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nihir Patel whose telephone number is (571) 272-4803. The examiner can normally be reached on 7:30 to 4:30 every other Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia Bianco can be reached on (571) 272-4940. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Nihir Patel


PATRICIA BIANCO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700
661107